JUNE 5.

The Rev. H. C. McCOOK, Vice-President, in the chair.

Twenty-five persons present.

A paper entitled "On the Genus Hyliota," by Graceanna Lewis, was presented for publication.

The death of Dr. W. Lehman Wells, a member, was announced.

Observations on Actinosphærium eichornii.—A communication from Miss S. G. FOULKE on *Actinosphærium eichornii* was read by Prof. H. Carvill Lewis.

It was stated that while observing Actinosphæria, four individuals were seen to become fused, as it were, into one mass.

At the end of an hour, this mass had separated into three Actinosphæria, two of the original four remaining fused into one.

This double one then became constricted, a little to one side of the middle, apparently being about to separate. In a few minutes the *Actinosphærium* began to eject, at the point of constriction, a thin protoplasmic substance containing transparent granulated globules and free granules. By a waving motion of the rays, the masses of ejected matter were broken up, and the globules set free in the water.

These globules developed from one side an extremely long ray of finely granular protoplasm, slightly elongating at the same time, thus taking an oval shape. No trace of the axial threads peculiar to the rays of adult Actinosphæria could be discovered. The average length of these globules, including the ray, was ·1422 mm.; without the ray, ·0127 mm.

The next act of the globules was the sending out another ray from a point opposite to the first. Minute vacuoles appeared and ranged themselves close to the surface of the globule. Other rays were developed at various intervals of time. The appearance of the young Actinosphæria gradually became more perfect in resemblance to the parent. The growth was very slow, the perfect form not being attained for a period varying from one to two weeks, and the size was even then small.

The external layer of vacuoles of the *Actinosphærium* from which the globules had been ejected, contained numbers of granules in active motion. In the different vacuoles the number varied from ten to about one hundred, as nearly as could be counted. They were usually congregated at one point and seemed to be trying to force a way out.

Sometimes a globular mass of protoplasm was seen to run out upon a ray, and then, instead of returning to the body as usual, drop off into the water, and develop into a perfect *Actino-*

sphærium, in the same manner as those ejected in a mass from the body.

Several free cells, having rays, were observed, upon touching a ray of the *Actinosphærium*, to glide down it in the manner usual to captured prey, and be re-absorbed into the body.

One globule of protoplasm, running out towards the point of a ray, stopped, and while motionless sent out a long ray at right-angles to that supporting the globule. Another smaller globule ran out on this secondary ray and, in its turn, sent out a third ray at right-angles to the secondary ray, but parallel to the primary ray. It has been stated that the rays of the *Actinosphærium* never branched, but the observer thought that the above phenomenon could be truly called branching, as all the protoplasm returned to the main ray, and thence to the body.

To ascertain whether any globules of protoplasm *artificially* freed from the body of the *Actinosphærium* would develop in the same manner as those above described, an *Actinosphærium* was crushed in the livebox so violently as to completely disintegrate it. The vacuoles were broken up, and the internal mass of protoplasm mixed with the water, only two or three small masses of the external vacuoles remaining intact. On removing the pressure, all the fluid protoplasm was seen to gather itself up into globules, of sizes varying from ·0507 mm. to ·253 mm.

These globules contained vacuoles, the size and number of the vacuoles varying with the size of the globules. The water became free from protoplasm, though a large number of the granules, which had been contained in the external vacuoles previous to the crushing of the *Actinosphærium*, remained swimming actively about in every direction.

The globules remained quiet for some minutes, and then began to extend pseudopodial rays. The vacuoles increased in number and arranged themselves close to the exterior of the globules, those of the largest size pushing out the thin protoplasmic covering, so as to produce a strong resemblance to the perfect *Actinosphærium*. The resemblance of each globule to the original *Actinosphærium* became more and more perfect. The few masses of the original vacuoles also protruded rays, thus conclusively showing that the rays of Actinosphæria are not necessarily dependent upon the central mass of protoplasm. The vacuole masses developed into perfect Actinosphæria much more quickly than the globules formed of the central protoplasm, an hour or two being sufficient to perfect the development. The rays of all the immature Actinosphæria were irregular and flattened and in many cases lacked the axial thread.

The Actinosphæria moved their pseudopodial rays freely in all directions, the ray being bent close to the peripheral layer of vacuoles.

From an original colony of eight individuals, a small bottleful

was manufactured in the manner above described, the time needed for development being in proportion to the size of the fragments into which the Actinosphæria were divided. The above experiments were tried on many individuals, the only difference of result, in the various instances, being in the degree of completeness with which the protoplasm separated itself from the water. It was argued from the above facts, that the power of any part of an *Actinosphærium* to develop into a perfect individual was inherent, and not dependent upon any peculiar condition of the animalcule.

Fig. 8, Pl. XLI of Leidy's Rhizopods of North America, which he doubtfully refers to the Actinosphæria, exactly resembles a medium stage in the development of the globules ejected from the body of the *Actinosphærium*.

The observer stated that the rays of *Actinosphærium*, when irritated by being compressed, would be retracted completely on all sides, and would again appear on the cessation of the disturbance.

The length of time needed for the development of the Actinosphæria, in the reproduction by natural means, was from seven to fourteen days; that needed for the development, in the reproduction by artificial means, was from one to two days.

In the latter case this length of time was needed only in cases when the crushing was carried to extremes, as, when the *Actinosphærium* was simply divided into small pieces, a few hours were all that was needed to complete the development of the fragments.

JUNE 12.

Mr. JOHN H. REDFIELD in the chair.

Twenty-three persons present.

Cutaneous Nerves in Mammals.—Dr. HARRISON ALLEN, in continuation of his remarks on the trophic value of the cutaneous nerves spoke of the distribution of the larger setæ-bearing hair-follicles in mammals as exposed after depilation. He described the oral, the mental, the supra-orbital and the proximo-carpal groups as well as those placed on the lateral aspects of the limbs. He had succeeded in tracing nerve-filaments to the follicles in all instances and held that they bore close analogies to the pteryls of the birds. In specimens in which the follicles were rudimentary he had observed failure of the nerve also, and he was thus induced to believe that a close relation existed between the setæ-bearing follicles and the nerves themselves.

The following was ordered to be printed:—